


March 12, 1981

Dear Mr. Dawson,

This short report gives some comments and suggestions for the new BASIC cartridge. This are my feelings after having had a chance to examine the prototype from Dave Nutting Assoc. Overall my opinion is that this cartridge is not ready for marketing. The following points will bring this out;

- * Because of the new features, some of the old tape features and light pen input have been lost. Advanced users will be able to work around this, but beginners will be somewhat confused, still trying to master the BASIC. The following few points are to help make the new BASIC easier to work with;
- * A :INPUTRUN command that would work from within a BASIC program to load the next program from tape and execute it. This would be very much like the existing :RUN command except it would expect to interpret BASIC code.
- * Provide the ability to accept light pen input. As it is, setting port 14 to 10(decimal) and printing the value of ports 14 or 15 will "BOMB" the BASIC.
- * More importantly, since the :INPUT routine was modified, old formatted tape will not load. A routine to input old formatted tapes using an old cassette interface should be possible. This requires knowing where the new interrupt routine is so that control can be transferred back to the new BASIC after loading an old tape. I have checked and found that data is still being fed to port 12 by the old cassette interface when the new BASIC is running. Users who buy the new BASIC by itself will want to convert all their old software to the new format without retyping it. 
- * The :INPUT (#) no longer works to grab the specified (#) program off of tape. I am not sure if this could be put back into the BASIC using the new memory mapped tape format.
- * The KP function no longer accepts input from tape. Again, the new tape format makes this feature difficult to provide.
- * :LIST and :RETURN have been lost as commands.
- * A change to the line editor key assignment should be made so that the editor is not a shifted function. My suggestion is to switch its position with the SPACE key assignment. This would be a more desirable feature if the user did not have to shift first.

- * The :INPUT will sometimes "BOMB" the BASIC after a bad load. This has happened to me both for too low of an input level, and data lost when recorded on tape. Some sort of load/record level indicator like on the cassette interface would be good.
- * The line command should be fixed! The feature of having points beyond the screen is nice (+127,+127). But unless the bugs are worked out, this will really confuse beginners.
- * A longer cable between the BASIC and tape recorder is now required.
- * A source listing and quick reference guide as well as important variable locations and good example programs should be included as part of the manual. The users will work this all out anyway, but to those new to the Arcade, this would help them to feel more confident about the product they are buying.

In conclusion I feel the new features (TRACE, LINE EDITOR, fast tape I/O, the added array *(), and the modified LINE) are overall better than the old BASIC, once all the bugs have been worked out.

Respectfully submitted,

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Questionnaire Analysis

This Analysis is to provide objective and personal reactions of how members of the Michigan Bally Users Group responded to our questionnaire, and comments on what we feel are important subjects to be aware of in order to capture the largest possible market for both the ZGRASS-32 Add-Under and Bally Arcade Game. We constructed the questionnaire as one page of 'check an answer' and one page of essay responses. From past meetings we found that users who attended were those more interested in expanding their systems to a full computer, than those interested in playing the arcade games. We therefore tried to aim our questions toward this group, and the results of this questionnaire should be viewed with this consideration in mind.

5/35 Most Users who answered this questionnaire already owned a Bally Arcade (80%). 28 of 35
Another 14.3% wanted to get one, and 5.7% are waiting to see what the Add-Under is like before they decide if they will buy an Arcade. Most of the Arcade owners have the Basic cartridge and the cassette interface, but others are waiting for the Add-Under, and of course some are content with it as just a game. About half of the responses indicated they wanted a keyboard, printer, and memory expansion for the Arcade Game. A few even wanted to attach a disk drive. Although access to these features would be made available with the Add-Under, some users have already attached these devices directly to the Arcade Game. 20/35

Besides the printer, keyboard, memory expansion, and disk, the users expressed an interest in other more exotic peripherals. These were a Light Pen, High-Res Graphics Upgrade, Bally to another computer interface, Expanded Handles (speed ball, analog joy-stick, etc.), Modem, Graphics Tablet, and Plotter. One person even expressed an interest in a camera controller. All of these, except High-Res, would be easy to make provisions for and would make the ZGRASS system attractive for engineers, scientists, artists, and students as well as for personal computer programming applications. Perhaps the solution to the interest in High-Res could be satisfied with an updated High-Res Arcade Game that would be compatible with existing cartridges and the Add-Under. The High-Res would make the ZGRASS system competitive with Apple's, Mattel's, Atari's, and Radio Shack Color Computer's graphics. *Apple here* *coming*

Software interest definitely leaned toward the game side, with logic and interactive games. This was to be expected, since up to now all the arcade has been marketed as a video game. Educational, Music, Business, Utilities, other languages, and Adventure games each recieved some interest. Although current users are oriented toward the gaming aspects of computing, I feel that with its Z-80 processor, it is capable of routine computing and with its inovative designs may prove to be a surprise to the Business/Engineering microcomputer markets. If the hardware is available (Parallel and Serial communications ports, Disk interface, and Expansion bus) the ZGRASS machine could lend itself to engineering and scientific software applications. This would be advantageous in that engineers, teachers, and other users would have an easy-to-learn system that would be capable of interfacing to the outside world.

The excitement about the Add-Under was overwhelming. Users who have been waiting 2 to 4 years for an Add-On expressed a great deal of interest in purchasing the Add-Under, but noted that Bally has promised an Add-On many times in the past. I think this shows one

of the largest obstacles that Astrovision will have to overcome; regaining the users trust. Any further postponements, or failures to produce what is promised, would be enough now to turn users away. Bally owners have been waiting in faith too long,

A definite interest in the ZGRASS language and a disk controller shows that users have a serious attitude toward the Add-Under. Their interest in a Parallel printer port (Centronics standard?), an RS232-C Serial port, an Assembler, a monitor, an extended Basic, a Voice Synthesizer, other computer languages (PASCAL, PL/I, FORTH terse, etc.), and Stereo sound shows that they want the ZGRASS Add-Under to be a fully capable computer system. Users also want complete documentation with internal software listed. An interest was also shown in being able to attach a prototyping board for experimentation. If adequate documentation and system software listings were made available instead of being deemed proprietary, I'm sure more computer hackers/hobbyists would take an interest in the Add-Under's abilities. This is how the Apple became popular.

We all wanted to see more commercial arcade type games like Asteroids, Missile Command, Battlezone, Pacman, Ripoff, Space War, Tailgunner, and Lunar Lander. The selection of Galaxian and Space Zap as cartridges was approved and commended by us all.

Aside from the commercial games there was a strong demand for an Adventure game and a good Chess (multi level difficulty, editing abilities, etc.). The users also wanted to see more three-dimensional type games but did not specify a topic, save for one person who wanted a 3-D space game. The normal interest in Sports, Action/Skill, Strategy/Logic, and educational games was present with suggestions to make improvements in existing cartridges of these categories (Extended number of boards on Space Invaders, more variations on plays and options for baseball and football). Some people complained that there should be more single player, with multi-player option, games. Many people agreed that one of Bally's best advantages was its high speed interactive graphics ability and that it should be implemented in more games.

When we asked what type of utility programs were wanted, the most common response was an Assembler (also a Macro Assembler and disassembler). Commonly needed utilities were present in the responses; Editor, Word Processor, Accounting, Income Tax, Disk Utilities, a DOS, Business, Data Base, and base conversions. One user wants Graphics Vectoring routines; these already exist in the on-board ROM in the Arcade game, but it would be nice to see them available from ZGRASS. Much more documentation is needed. Utilities are as important as the software, allowing the user to create and manipulate it.

Past favorites usually tend to indicate what type of games will be popular in the future, and from our responses the 3 favorites are Space Invaders, Football, and Pinball. Some mentioned Panzer Attack, Clowns, Seawolf, Checkmate, Bingo Math, and Music, but they did not receive as great an attention. Popular games created in Basic were Simon, Connect 4, Three Tone music assembler, Artillery Duel, and Lunar Lander. Although some of these are just as good as a cartridge (machine language) game, many users felt that if they had better documentation of the on-board ROM, they could improve Basic programs by adding machine subroutines.

Most users felt that the newsletters were very useful since this was their only source of information as to what was new with the Bally. The general feeling about them is that the Arcadian has been a good source of Bally information, but has of late concentrated too much on the Blue Ram, and the Cursor while expensive and sometimes late, has a generally higher quality. I feel that both newsletters are good but cannot be compared directly. The Arcadian and Cursor both have published many helpful tutorials and innovative programs.

Users wanted better documentation for everything (Hardware, Software, and interfacing). The Bally just does not have enough supporting information available. They would like to see a better Basic manual for beginners, a detailed description of how to use commands and special features, an explanation of how to use the on-board ROM routines, memory maps, Schematics, and a better hackers guide. They also stated that the ZGRASS machine should be thoroughly documented with manuals, beginners manuals, hardware information, software listing, expansion and interfacing information, and applications manuals. Documentation is as important as the computer that it supplements! Many good computers have been ignored for their lack of documentation where many less capable systems have become successful because of their documentation. Plain and simple - documentation is important!

Some users who attended also owned other computer systems (TRS-80, Apple, Atari, etc.). From what they have seen of the Bally, most were interested in a Bally to supplement, or to interface directly to, their existing systems. This is one area where good expandability and documentation could sell ZGRASS systems to TRS-80 owners looking to upgrade their black and white low-resolution graphics (the 3 people who had TRS-80's were there for just this reason).

The following topics were brought out in our 'other comment' section. Some subjects are recurring, which shows they are on the users mind and are therefore worth reviewing.

The ZGRASS-32 machine needs a better character set. EVERYONE who saw the 3x5 character set for the ZGRASS made mention of its poor quality. This suggests that a lot of work still needs to be done in this area. Perhaps this problem may be solved by a better 3x5 set, a 4x6 set, multiple sets in the machine (3x5 for High density text display and 6x9 or 5x7 for word processing), or an external monitor. An obvious solution is to increase the resolution, and perhaps this may be done at a later date with an improved Arcade game, but I realize the difficulties of that at this time. Whatever the solution, one fact is clear---a better character set is necessary or the ZGRASS machine may find itself very unpopular.

An interest in higher resolution capabilities, compatible with existing games and software, was expressed by some users. Again, this may suggest a next generation of Bally at a later date. Most of us felt the existing resolution is good, but as the state of the art progresses a higher resolution is necessary for the Bally to remain a prime contender.

As most Bally users are extremely loyal, we recieved such comments as "Best on the market", "Better than Mattel, Atari, APF, and Odyssey", and other comments of praise. But one point they made is that advertising for the Bally has a long way to go before it

catches Mattel's and Atari's. Another point was that the reputation of Bally has been tarnished in the past by; bad units (heat problems), warranty problems, slow delivery, and most of all Bally's ability not to keep a promise (this is more important than it would seem),

There is a definite need for documentation. From explaining what a computer is to the person who bought the Bally as a game, then stumbled into the Basic cartridge, to the user trying to interface it to his Apple or TRS-80. The more a person is able to understand, the more he will be able to accomplish. No one likes buying a computer and then being stuck not knowing what he can do with it. Good documentation will affect sales as much as the features a machine has.

Expansion and support were also main user concerns. Being able to add RAM, connect a printer (parallel), and interface to the outside world were capabilities users wanted to have. Supporting the Add-under with software, peripherals, and updated material (even updated ROM's), will show the user he can depend on Astrovision. Many people will shy away from a company that does not back what they sell, as was evident in the demise of the Compucolor computer.

In conclusion, it is apparent that there is a great interest in the ZGRASS Add-under, and continuation of Bally games. But putting together a successful computer system will take a great deal of work. Everyone was impressed with what the ZGRASS could do; Screen Editor, Snap/Display, graphics commands, Macro capability, four colors, graphics clipping, multitasking, good graphics (160x102), and a compiler. But the ZGRASS will have its problems; poor character set, will need good documentation, needs a parallel printer port, more expandability like the Arcade Game has available, a disk interface, and of course manufacturer support will be critical.

We are, as always, interested in the development of the ZGRASS add-under and Future products for the Arcade. We hope we can work together to make the Bally a success.

Respectfully submitted,

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BCB/mn